



SURVEY ON VARIOUS SOCIAL NETWORKS RANKING MECHANISM

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ABSTRACT

Social Networks are the common platform for the present generations to share ideas. The members of these sites have grown to billions in the last decade and much more at present. Different social networking services like Facebook, Twitter, YouTube, etc., allow the person to create a public profile and also allow that person to view content posted by others as well as to post their own content or opinions. In this paper describes survey on a different ranking mechanism of social media such as Page rank, Polarity, Engagement rate, etc. Social networks need to manage and control the drift of insane amount of information by filtering and ranking everything in order to ensure they are right there for users' viewing pleasure. The objective of this paper is to show what metrics, measurements are used for by researchers to study and analyze social network, in their work with academic purposes. The concern of this paper is to show which data, metrics, and measures are considered as a basis of the analysis.

KEYWORDS: Page Rank, Polarity, Node rank, Reputation, Engagement rate, Social network.

I. INTRODUCTION

Ranking information on the web was done initially with a generic criterion based on the isolated content of the explored pages. Several techniques were used in the earlier versions of search engines. Variations on the frequency of terms and their relations were widely used. However, the rankings that engines based on this idea returned were not very coherent as users of the first well-known commercial search engines soon discovered. This started several research efforts that tried to find alternative methods based on criteria other than pure document content and layout in order to give better ratings and rankings. Several algorithms are now in use that starts from the principle that considering the World Wide Web as a graph, a node of this graph (i.e. a page or a document linked to it) is more important, that is, gets a better rating, if it's pointed by more 'authoritative' nodes than other resources. Section 2 introduces the concept of the social network; Section 3 describes some of the most reputed ranking algorithms as well as important metrics. Section 4 contains Literature survey, and the last section closes with an overall discussion.

II. SOCIAL NETWORK

A social network [1] is a representation of the relationships existing within a community of people. Even within the same community, several types of social network can be built depending on the social relationship taken into account: kinship, acquaintanceship, friendship, mutual support, cooperation, similarity are regular criteria utilized as a part of setting up the social relationship segments of a community. The corresponding social networks are represented as graphs. Social Websites are supporting the exchange of thoughts and opinions through interaction [12] among the users. They turned into the windows for all promoting, deals, administrations and data trades among the clients. They are login based. The login mechanism is very simple, and it will not take much time to operate for any user. The system of a social network is recognized as a better component to improve the necessary factors in the fields of marketing, sales, and banking sectors.

Social Network is a system made up of individuals/entities and interactions among individuals/entities. A couple of cases are web diagram, co-origin systems, reference systems, email systems, kinship systems, and so forth. The social media creates many new challenges for information retrieval. It is very large and heterogeneous.

III. RANKING MECHANISM

A. Page Rank

As Page Rank, is a method for rating Web pages objectively and mechanically, effectively measuring the human interest and attention devoted to them. A major application of Page Rank is searching. Page Rank measures the influence [11] of each vertex within the graph. Here it is used in social media networking. The main idea of Page rank [10] is that good node point or are pointed by another good nodes. So, the authority of a node depends on the nodes that point to it. Moreover, to avoid the rank sink [10] problem some probability of jumping to whatever node in the graph is introduced, this probability breaks the not truly increment of authority due to the cycles of the graph. Here it uses random jump to get out of the loop.

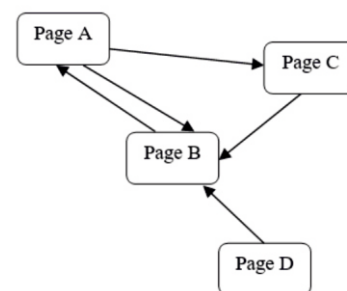


Figure 1. Page Ranking Algorithm

B. Node Ranking

The rating that Node Ranking creates is based on the idea that each node on the graph has an associated degree of authority measure. Initially, all nodes are assumed to have the same authority. After running Node Ranking the resulting authority measure is used to infer the reputation of a node within the graph, that is, the reputation of a member of his community. Node Ranking follows a random walker strategy to explore the graph. It starts in a randomly selected node and proceeds by selecting one of the nodes that can be reached through out-edges. The fundamental thought of the Node Ranking calculation is that every node has an expert and a piece of its power is spread to the out-node by means of out-edges. The authority of a node depends on the authority of its in-nodes.

```

do
  n ← getNode(v)
do
  pass.Authority(n)
  mnew ← getNextNode(n)
  n ← mnew
while (∃ mnew)
while (¬ converge())
  
```

Figure 2. Node ranking Algorithmⁱⁱⁱ

Here some functions that require additional explanation. getNode(): returns a randomly chosen node of the graph. The probability is uniform. getNextNode(node x): returns one of the out neighbors nodes of the node x. Each node has a set, that can be empty, of out-edges that point to another node. This function can return a null node to stop the path of the random walker by introducing some elements of randomness. When getNextNode() returns a empty node, in fact, the path is broken. There are two cases where the path is broken: 1) If the algorithm arrives at a node that has been already visited in the previ-

ous steps. 2) The walker evaluates the jumping probability whenever it reaches a node. `passAuthority(node x)`: this function assigns part of the authority of node x to all the nodes that are pointed by x . `converge()`: this function can be evaluated anytime, it's a test to all the nodes of the graph. Each node remembers its last increment in the authority. When all the nodes of the graph are steady/stationary the algorithm ends.

C. Reputation

Reputation is commonly employed as the measure of the trustworthiness of users in on-line communities for a particular brand. Reputation systems play an important role in the process of trust establishment and management [13]. For the right and secure working of notoriety frameworks, a few attractive prerequisites ought to be fulfilled. It elicits the requirements for reputation metrics along with the features necessary to achieve such requirements. Reputation systems can be analyzed from three perspective or view, namely

- Formulation,
- Calculation
- Dissemination.

The formulation measurement describes the mathematical model and input for the assessment of reputation values. It includes two main points: the reputation measure and the mathematical model (metric) used to aggregate ratings. Reputation can be measured using discrete or continuous values. The calculation measurement addresses the practical design and implementation of the algorithm for surveying reputation, whereas the dissemination measurement focuses on the mechanisms for the distribution and storage of ratings and reputation values among entities within the system. The main feature of the calculation and dissemination dimensions is the structure of the reputation system, which can be either centralized or decentralized. Reputation marketing and building a good online reputation are critically important. However, they are not stand-alone growth strategies. Reputation marketing yields the most positive returns when coupled with other online and offline marketing efforts since the effectiveness of these efforts is increased by a good reputation. Here all of this ranking algorithm

it uses the reputation as a medium to rank the entities.

D. Engagement rate

Engagement means establishing and sustains relationships while developing a level of trust that makes people comfortable enough to do business with you [9]. Engagement rate can be calculated using their friend can interact with user's posts or make them show up in their Newsfeed using data like total numbers of like, shares, and comments are available in per post of user, and using data we can find out how many people are engage with user's profile. This method is used in Facebook to know how much user is interacted with that particular page and share the same information.

E. Hits Algorithm

Hyperlink-Induced Topic Search (HITS knew as hubs and authorities) is a link analysis algorithm that rates Web pages. The idea behind Hubs and Authorities stemmed from a particular insight into the creation of web pages when the Internet was originally forming; that is, certain web pages, known as center(hubs), served as large directories that were not actually authoritative in the information that they held, but were used as compilations of a large amount of information that led users direct to other authoritative pages. In other words, a good hub represented a page that pointed to many other pages, and a good authority represented a page that was linked by many different hubs.

F. Polarity Ranking

A basic task in sentiment analysis is classifying the polarity of a given text at the document, sentence, or feature/aspect level whether the expressed opinion in a document, a sentence or an entity feature/aspect is positive, negative, or neutral. Advanced level, "beyond polarity" sentiment classification looks, for instance, at emotional states such as "angry", "sad", and "happy". [15] The polarity of a word can be identified by studying the occurrence frequency of the word in a large annotated corpus of texts [16]. If the word occurs more frequently among positive texts, then its polarity is positive. If it occurs more frequently among negative texts, then its polarity is negative. If it has equal frequencies, then it is a neutral word. So in social networking, this is also an important algorithm.

IV. LITERATURE SURVEY

| Sr. No. | Paper Title | Year | Method Used | Remark |
|---------|---|--------------------|---|---|
| 1. | Distributed and Adaptable Ranking Algorithm for Reputation and Relevance Extraction. ^[1] | Research Gate 2015 | Node Ranking | Node Ranking algorithm gives accurate result but it is time consuming as Converge function has to check all nodes |
| 2. | Metrics of Social Websites: A Case Study ^[2] | IEEE 2104 | Page ranking | Page ranking algorithm worked on concept of authority transfer through the edges for larger number it faces dead lock or Rank sink problem |
| 3. | A reference model for reputation systems. ^[4] | Elsevier 2014 | Reputation systems can be analyzed by three dimensions: Formulation, Calculation and Dissemination. | Trust establishment and management Reputation System that produce reputation values is either 0 or 1. (i.e. a value between 0.5 and 1 rounds to a 1, while anything under 0.5 rounds down to 0) |
| 4. | Sentiment analysis algorithms and applications: A survey | Elsevier 2014 | Polarity Ranking | In Sentimental Analysis it gives positive negative polarity of words based on how frequently it comes in native /positive comments |
| 5. | Application of Ensemble Models in Web Ranking ^[7] | IEEE 2010 | Hits Algorithm | A good hub represented a page that pointed to many other pages, and a good authority represented a page that was linked by many different hubs it also worked on authority transfer |
| 6. | Digital Brand Management — A Study on the Factors Affecting Customers' Engagement in Facebook Pages. ^[9] | IEEE 2015 | Online Engagement Rate | We can track how much user are engaged to that particular page. If page is not kept up to date then user will have no interest in that page that result in low engagement rate. |

V. CONCLUSION

Social networks are the platforms in which the process of interaction is a common agenda. Here the way of exchange of ideas between a pair of members is by means of various channels – like text messaging, voice chatting, photo sharing, etc. and for that various algorithm are available. In the paper, some of this algorithm or metrics explanation is given. This paper gives the information of different algorithms which are useful for social network from this survey it is clear that node ranking is better then hits and page rank algorithms. Reputation is also a very important factor because it plays a major role in trust establishment and management. Polarity rank is use full in the sentimental analysis. The conclusion that rises up out of this paper is that examination on and about the social network community taking designs or rethinks conventional strategies and instruments, or adopts new ones or combination of them.

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